

# Math 7 SOL Review

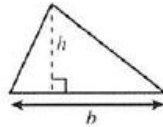
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2011-2012

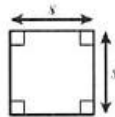
# Grade 7 Mathematics Formula Sheet

## 2009 Mathematics Standards of Learning

### Geometric Formulas

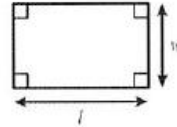


$$A = \frac{1}{2}bh$$



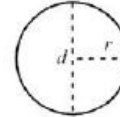
$$p = 4s$$

$$A = s^2$$



$$p = 2l + 2w$$

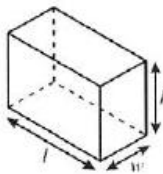
$$A = lw$$



$$C = 2\pi r$$

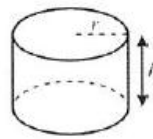
$$C = \pi d$$

$$A = \pi r^2$$



$$V = lwh$$

$$S.A. = 2lw + 2lh + 2wh$$



$$V = \pi r^2 h$$

$$S.A. = 2\pi r^2 + 2\pi rh$$

### Pi

$$\pi \approx 3.14$$

$$\pi \approx \frac{22}{7}$$

### Abbreviations

milligram	mg
gram	g
kilogram	kg
milliliter	mL
liter	L
kiloliter	kL
millimeter	mm
centimeter	cm
meter	m
kilometer	km
square centimeter	cm <sup>2</sup>
cubic centimeter	cm <sup>3</sup>

ounce	oz
pound	lb
quart	qt
gallon	gal.
inch	in.
foot	ft
yard	yd
mile	mi.
square inch	sq in.
square foot	sq ft
cubic inch	cu in.
cubic foot	cu ft

Area	A
Circumference	C
Perimeter	p
Surface Area	S.A.
Volume	V

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**SOL 7.1 The Student will**

- a) investigate and describe the concept of negative exponents for powers of ten;
- b) determine scientific notation for numbers greater than zero;
- c) compare and order fractions, decimals, and percents and numbers written in scientific notation;
- d) determine square roots; and
- e) identify and describe absolute value for rational numbers.

**HINTS & NOTES****Scientific Notation:**

To write a number in scientific notation, you write the number as two factors.

-Move the decimal to the \_\_\_\_\_ to make a factor between 1 and 10 (so that there is only one number to the left of the decimal).

-The \_\_\_\_\_ will be the number of places that you moved the decimal.

Example:  $25,000,000 = 2.5 \times 10^7$

To write a number in standard form, you move the decimal point to the \_\_\_\_\_ as many places as the exponent. Put 0 in any space.

Example:  $3.4 \times 10^5 = 340,000$

For negative exponents the decimal is moved to the right. The number of places you moved is the decimal's negative \_\_\_\_\_.

Example:  $0.000042 = 4.2 \times 10^{-5}$

To write the number in standard form, you move the decimal point to the left as many places as the exponent. Put a 0 in any space.

Example:

**Steps for ordering numbers:**

1. Change all of the numbers to decimals.
2. Line up the decimals.
3. Add on zeros until the numbers are the same length. (same number of digits)
4. Ignore the decimals and put them in order.

\*\*Remember to look for the order that the questions asks. (L → G or G → L)

**PRACTICE****1. Which is correctly written in scientific notation?**

- A.  $5.6 \times 10^6$
- B.  $56 \times 10^5$
- C. 5,600,000
- D. 56 million

**2. Which is true?**

- F.  $6.57 \times 10^{-3} = 0.000657$
- G.  $6.57 \times 10^{-3} = 0.00657$
- H.  $6.57 \times 10^{-3} = 6,570$
- J.  $6.57 \times 10^{-3} = 657,000$

**3. Which set is ordered greatest to least?**

- A.  $\left\{ 16\%, \frac{1}{6}, 1.6 \times 10^6, 0.166 \right\}$
- B.  $\left\{ 16\%, 0.166, \frac{1}{6}, 1.6 \times 10^6 \right\}$
- C.  $\left\{ 1.6 \times 10^6, 16\%, \frac{1}{6}, 0.166 \right\}$
- D.  $\left\{ 1.6 \times 10^6, \frac{1}{6}, 0.166, 16\% \right\}$

To change a decimal to a percent

To change a fraction to a percent

To change a fraction to a decimal

To change a decimal to a fraction

4. As Sam walked through the mall he passed store with a sign that read "Going Out of Business Sale."

Everything is  $\frac{4}{7}$  off." What percent is  $\frac{4}{7}$ ?

- A. 42.9%
- B. 57.1%
- C. 71.4%
- D. 90%

5. Which is the least number in this list?

$1\frac{5}{8}$ , 2, 1.6,  $\frac{3}{4}$ , 0.794

- F. 1.6
- G. 0.794
- H.  $\frac{3}{4}$
- J.  $1\frac{5}{8}$

6. Which shows 346,000,000 written in scientific notation?

- A.  $346 \times 10^6$
- B.  $346 \times 10^8$
- C.  $3.46 \times 10^8$
- D.  $34.6 \times 10^7$

7. Which list is in order from least to greatest?

- F. 0.17, 40%,  $\frac{2}{3}$ ,  $\frac{5}{8}$ , 0.78
- G. 0.17, 40%,  $\frac{5}{8}$ ,  $\frac{2}{3}$ , 0.78
- H. 0.78,  $\frac{5}{8}$ ,  $\frac{2}{3}$ , 40%, 0.17
- J. 0.78,  $\frac{2}{3}$ ,  $\frac{5}{8}$ , 40%, 0.17

**To Determine the Square Root:**

**8. Simplify  $\sqrt{400}$**

- A. 40**
- B. 20**
- C. 10**
- D. 5**

**To Determine the Absolute Value  
of a number:**

**9. Simplify  $\left|-\frac{3}{4}\right|$**

- A.  $\frac{4}{3}$**
- B.  $\frac{3}{4}$**
- C.  $-\frac{3}{4}$**
- D.  $-\frac{4}{3}$**

<b>SOL 7.2</b> <b>The student will describe and represent arithmetic and geometric sequences using variable expressions</b>
--

### HINTS & NOTES

An arithmetic sequence you have to find the \_\_\_\_\_. This is what you would add or subtract from each number to get the next.

In geometric sequences you have to find the \_\_\_\_\_. This is what number you would have to multiply to get the following number.

To write the variable expression you pair the common difference or ratio and a variable.

Examples:

3, 6, 9, 12... expression:  $m + 3$

Or

1, 5, 25, 125... expression:  $5n$

### PRACTICE

**1. What is the common difference of the arithmetic sequence shown below?**

**-4, -1, 2, 5, ...**

- A. 2**
- B. 3**
- C. 4**
- D. 5**

**2. What is the 5<sup>th</sup> term of the geometric sequence shown?**

**80, 40, 20, ...**

- F. 10**
- G. 5**
- H. 2.5**
- J. 1**

**3. Which expression would represent the following sequence?**

**4000, 1000, 250, ...**

- A.  $100h$**
- B.  $4h$**
- C.  $-h$**
- D.  $-h$**

## SOL 7.3

The student will

- a) model addition, subtraction, multiplication and division of integers; and
- b) add, subtract, multiply, and divide integers

### HINTS & NOTES

#### **Adding integers –**

Example:  $-4 + -2 = -6$   
or  $-4 + 2 = -2$

#### **Subtracting integers –**

Example:  $-4 - (-2)$   
becomes  $-4 + 2$  which  $= -2$

#### **Multiplying and Dividing Integers –**

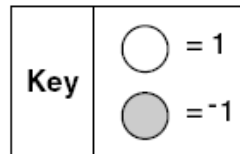
positive • positive = \_\_\_\_  
negative • negative = \_\_\_\_  
positive • negative = \_\_\_\_

### PRACTICE

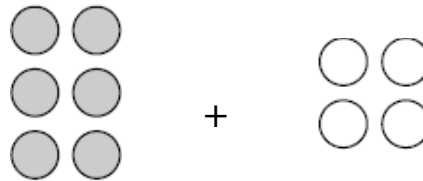
1. During a winter's day, the low temperature was recorded at  $21^{\circ}\text{F}$ . The wind-chill temperature that same day was  $-8^{\circ}\text{F}$ . What was the difference between the wind-chill temperature and the low temperature?

- A.  $8^{\circ}$
- B.  $13^{\circ}$
- C.  $25^{\circ}$
- D.  $29^{\circ}$

2.



Using the key above as a guide, what is the result of the operation in the model below?



- F. -10
- G. -2
- H. 2
- J. 10

3.

The change in the number of students enrolled at a school over six months is shown in the following table.

**School Enrollment**

Month	Change
October	-15
November	8
December	3
January	-12
February	3
March	11

The number of students enrolled at the end of September was 4,327. What was the number of students enrolled in the school at the end of March?

- A. 4,275
- B. 4,300
- C. 4,325
- D. 4,352

## SOL 7.4

The student will solve single-step and multistep practical problems, using proportional reasoning.

### HINTS & NOTES

When setting up a **proportion** – make sure that the numerators and \_\_\_\_\_ match.

Example:

$$\frac{\text{height}}{\text{shadow}} = \frac{\text{height 2}}{\text{shadow 2}}$$

To solve a proportion –

Proportions can be used to convert between the measurement systems. For example:

\_\_\_\_\_ = \_\_\_\_\_

Proportions can also be used to represent percent problems. For example:

\_\_\_\_\_ = \_\_\_\_\_

### PRACTICE

1. Ralph's map of Virginia Beach uses a scale of 1 inch for every 7 miles. Ralph runs a distance of 13.2 miles from his house in Virginia Beach every weekend. Which is closest to the number of inches needed to represent this distance on Ralph's map?  
  
A. 7.2 inches  
B. 7.0 inches  
C. 6.2 inches  
D. 1.9 inches
2. A flag pole in front of the school casts a shadow 4 yards long. At the same time, the school building 20 yards tall casts a shadow 12 yards long. To the nearest yard, what is the height of the flag pole?  
  
F. 5 yards  
G. 6 yards  
H. 7 yards  
J. 60 yards
3. What is the missing term in this proportion?  
$$\frac{10}{15} = \frac{n}{9}$$
  
A. 5  
B. 6  
C. 20  
D. 22.5
4. Kevin mixes paint using 8 ounces of yellow paint for every 3 ounces of white paint. At this rate, how many ounces of white paint would be mixed with 24 ounces of yellow paint?  
  
F. 8  
G. 9  
H. 19  
J. 64



**SOL 7.5**

The student will

- a) describe volume and surface area of cylinders;
- b) solve practical problems

**HINTS & NOTES**

**\*\*Use the formula sheet at all times\*\***

**Use the formulas exactly as they are on the sheet.**

**Be sure to highlight the following information in the problem:**

**Don't forget to check the units:**

Squared units for area and cubed units for volume.

**Surface area –**

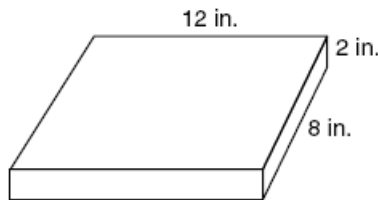
**Volume –**

**PRACTICE**

1. A cylinder-shaped can has a diameter of 4 feet and a height of 4.5 feet. If the can is empty, which is closest to the minimum amount of water needed to completely fill the can?

- A. 32 cu ft
- B. 49 cu ft
- C. 57 cu ft
- D. 1145 cu ft

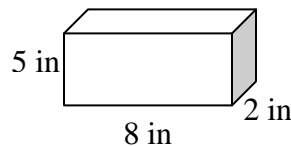
2. Lindsay is wrapping a birthday gift in a rectangular prism-shaped box with gift wrap.



**What is the minimum amount of gift wrap Lindsay needs to cover the entire box?**

- F. 96 sq in.
- G. 136 sq in.
- H. 192 sq in.
- J. 272 sq in.

3. This rectangular prism is built with 1-inch cubes. What is the volume?



- A. 10 in.<sup>3</sup>
- B. 20 in.<sup>3</sup>
- C. 40 in.<sup>3</sup>
- D. 80 in.<sup>3</sup>

**SOL 7.6**

The student will determine whether plane figures-quadrilaterals and triangles-are similar and write proportions to express the relationships between corresponding sides of similar figures.

**HINTS & NOTES**

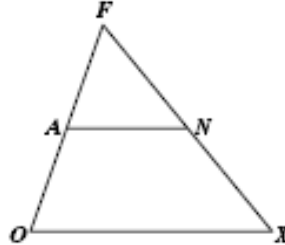
**Similar figures** – same shape but different \_\_\_\_\_. Their corresponding angles have the \_\_\_\_\_ measure and their corresponding sides are \_\_\_\_\_. This means that the ratios of corresponding sides are equal.

**Remember** – to solve a proportion – cross multiply or use equivalent ratios.

The symbol ~ \_\_\_\_\_

**PRACTICE**

1. Triangle FOX is similar to triangle FAN.



Which side of triangle FOX corresponds to side  $\overline{FA}$ ?

- A. FO
- B. AO
- C.  $\overline{FN}$
- D. NX

2.

The following is true about similar triangles  $ABC$  and  $DEF$ .

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF} = \frac{2}{1}$$

Which could be the lengths of  $\overline{BC}$  and  $\overline{EF}$ ?

- A  $BC = 6$  and  $EF = 3$
- B  $BC = 9$  and  $EF = 3$
- C  $BC = 3$  and  $EF = 6$
- D  $BC = 3$  and  $EF = 9$

3.  $\triangle ABC$  is similar to  $\triangle XYZ$ .

$AB = 15$  and  $XY = 25$ .

If  $YZ = 15$ , what is the measure of  $BC$ ?

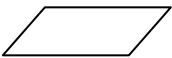




- A. 5
- B. 9
- C. 10
- D. 12

## SOL 7.7

The student will compare and contrast the following quadrilaterals based on properties: parallelogram, rectangle, square, rhombus, and trapezoid.

### HINTS & NOTES

**Quadrilateral – polygon  
w/ 4 sides**

Quadrilateral	Properties
Parallelogram 	<ul style="list-style-type: none"> <li>both pairs of opposite sides are _____ (equal in length)</li> <li>both pairs of opposite sides are parallel</li> <li>both pairs of _____ angles are congruent (equal in measure)</li> </ul>
Rectangle 	<ul style="list-style-type: none"> <li>both _____ of opposite sides are congruent (equal in length)</li> <li>both pairs of opposite sides are _____</li> <li>all four interior angles measure _____ (right angles)</li> </ul>
Square 	<ul style="list-style-type: none"> <li>both pairs of opposite sides are _____</li> <li>all four sides are _____</li> <li>all four interior angles measure _____ (right angles)</li> </ul>
Rhombus 	<ul style="list-style-type: none"> <li>both pairs of opposite sides are parallel</li> <li>all _____ sides are equal</li> </ul>
Trapezoid 	<ul style="list-style-type: none"> <li>one pair of opposite _____ sides</li> </ul>

### PRACTICE

1. Which quadrilateral is *not* a parallelogram?

- A. square
- B. rectangle
- C. trapezoid
- D. rhombus

2.



If all sides of the polygon pictured are NOT equal in length, the polygon is most likely a \_\_\_\_\_

- F. rectangle
- G. parallelogram
- H. trapezoid
- J. rhombus

3. Which of the following quadrilaterals has exactly one pair of parallel sides?

- A. Rhombus
- B. Trapezoid
- C. Rectangle
- D. Parallelogram


### SOL 7.8

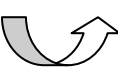
The student, given a polygon in the coordinate plane, will represent transformations (reflections, dilations, rotations, and translations) by graphing in the coordinate plane.


#### HINTS & NOTES


Translation = SLIDE

Rotation = TURN

Clockwise = 

Counter-clockwise = 

Horizontal = 

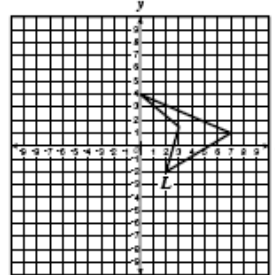
Vertical = 

Dilations=

Reflection =

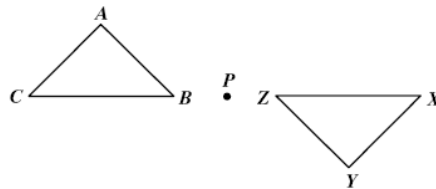
#### PRACTICE

1. Translate the figure horizontally -3 units.



Which best describes the location of the image of the vertex L?

- A. (-1, -2)
  - B. (2, -5)
  - C. (5, -2)
  - D. (2, 1)
2. The vertices of  $\triangle XYZ$  are  $X(3,5)$ ,  $Y(4,2)$ , and  $Z(0,2)$ . What are the coordinates of the vertices of the image of  $\triangle XYZ$  translated to the left 2 units and up 3 units?
- F.  $X(5,8)$ ,  $Y(6,5)$ ,  $Z(2,5)$
  - G.  $X(6,7)$ ,  $Y(7,4)$ ,  $Z(3,4)$
  - H.  $X(1,8)$ ,  $Y(2,5)$ ,  $Z(-2,5)$
  - J.  $X(1,2)$ ,  $Y(2,-1)$ ,  $Z(-2,-1)$
3.  $\triangle XYZ$  was obtained from  $\triangle ABC$  by a rotation about the point P.



- A.  $A \rightarrow X$ ,  $B \rightarrow Y$ ,  $C \rightarrow Z$
- B.  $A \rightarrow Y$ ,  $B \rightarrow Z$ ,  $C \rightarrow X$
- C.  $A \rightarrow X$ ,  $B \rightarrow Z$ ,  $C \rightarrow Y$
- D.  $A \rightarrow Z$ ,  $B \rightarrow X$ ,  $C \rightarrow Y$

### SOL 7.9

The student will investigate and describe the difference between the experimental probability and theoretical probability of an event.

#### HINTS & NOTES

**Always** write probability as a  $\frac{\text{first}}{\text{total}}$

( $\frac{\text{\# of times an event occurs}}{\text{total \# of possible outcomes}}$ ), then

change it to a decimal or percent if needed.

**Number cubes** and  $\frac{\text{total}}{\text{possible}}$  are the same thing.

$\frac{\text{theoretical}}{\text{possible}}$  **probability** is what should happen in an experiment based on reason.

$\frac{\text{experimental}}{\text{actual}}$  **probability** is what actually happens during an experiment.

EX:  $P(\text{heads}) = 1/2$ , but in an actual experiment we may get heads more or less than  $\frac{1}{2}$  the time. However, the more times you perform an experiment the closer your results should get to the theoretical probability.

#### PRACTICE

1. A regular card deck contains 52 cards, 4 of which are kings. Assuming that the cards are dealt randomly, what is the probability that the first card dealt will be a king?

- A.  $\frac{1}{52}$
- B.  $\frac{1}{13}$
- C.  $\frac{1}{12}$
- D.  $\frac{4}{13}$

2. The six faces of a fair cube are numbered 1 through 6. If the cube is rolled 300 times, what is the expected number of times a 5 will land face up?

- F. 50
- G. 100
- H. 200
- J. 250

3. Ryan has a basket of 20 blue marbles and 15 red marbles. What is the probability that the next marble he randomly chooses will be blue?

- A.  $\frac{1}{20}$
- B.  $\frac{4}{3}$
- C.  $\frac{3}{7}$
- D.  $\frac{4}{7}$

## SOL 7.10

**The student will determine the probability of compound events, using the Fundamental (Basic) Counting Principle.**

### HINTS & NOTES

**The Fundamental (Basic) Counting Principle** is a procedure that helps you determine the number of possible outcomes of several events.

**For example:**

The possible outfits for 2 shirts, 3 pants, and 4 hats would be  $2 \bullet 3 \bullet 4 = 24$  different outfits

**A \_\_\_\_\_ event is when you have more than one event.**

**For example:**

You have a bag that has blocks in it. There are 2 red, 3 orange, and 1 yellow. What is the probability of selecting a red then an orange if you replace the blocks?

$$- \bullet - = - = \frac{1}{6}$$

You have a bag that has blocks in it. There are 2 red, 3 orange, and 1 yellow. What is the probability of selecting a yellow then an orange if you do NOT replace the blocks?

$$- \bullet - = - = \frac{1}{10}$$

### PRACTICE

1. Meredith had 10 cards in her bag that had letters on them. There were 4 M cards, 2 E cards, and 4 R cards. What would be the probability of her drawing an M card NOT replacing it then drawing an E card?

2. Using the Fundamental Counting Principle, how many possible sundaes could you make if you have 2 types of ice cream, 3 different syrups, and 2 different types of toppings.

3.

#### Lunch Choices

Main Dish	Side	Drink
Hamburger	Salad	Milk
Turkey sandwich		Iced tea
Chicken strips	Fruit	Juice

**How many different lunch combinations consisting of 1 main dish, 1 side dish, and 1 drink are possible?**

- A. 6
- B. 9
- C. 18
- D. 27

The school soccer team is ordering new knee pads for their uniforms. The knee pads come in 4 different colors, 6 sizes, and 2 styles. How many different outcomes of knee pads are available?

- A 12
- B 24
- C 40
- 4. D 48

### SOL 7.11

The student, given data in a practical situation, will

- construct and analyze histograms; and
- compare and contrast histograms with other types of graphs presenting information from the same data set.

#### HINTS & NOTES

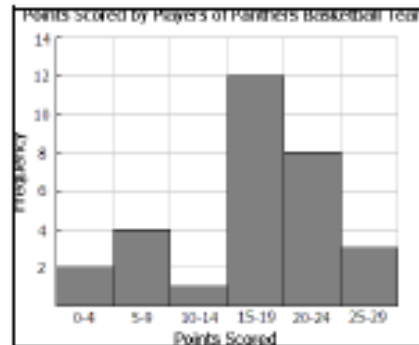
A \_\_\_\_\_ is a form of a bar graph where the categories are consecutive intervals. How tall the \_\_\_\_\_ are, are determined by how many times something falls into that interval.

The bars **DO** touch in this type of graph, because it is continuous data.

In comparing different graphs you could see how data are or are not related, find differences (make comparisons), make predictions by looking at trends, and decide “what could happen if”.

#### PRACTICE

- Use the following histogram.



Mrs. Norris, the Panthers basketball coach, is randomly picking a star player of the week. Predict which is **MOST LIKELY** the amount of points that the player she chooses has scored?

- 4 points
- 13 points
- 18 points
- 29 points

- Create a histogram to show the same data as the following stem-and-leaf plot

Stem	Leaf
5	6
6	0 2 7 8 8 9
7	0 0 0 1 2 6 6 8
8	2 3 4 8
9	3 7

**SOL 7.12**

The student will represent relationships with tables, graphs, rules, and words.

**HINTS & NOTES**

\_\_\_\_\_ are any set of ordered pairs.

A \_\_\_\_\_ is a relation where there is only one y value for each x

Remember the rule of 5!

1.

2.

3.

4.

5.

**PRACTICE**

1 Which rule represents the relation shown in the table?

$x$	$y$
2	1
3	3
4	5
5	7
6	9

**F**  $y = x - 1$

**G**  $y = x + 3$

**H**  $y = 2x - 3$

**J**  $y = 2x + 3$

2.

Which table contains *only* values that satisfy the following?

$$y = 2x$$

**F**

$x$	$y$
0	2
2	4
4	6

**G**

$x$	$y$
0	0
2	1
4	2

**H**

$x$	$y$
0	1
2	4
4	16

**J**

$x$	$y$
0	0
2	4
4	8



**SOL 7.13**

The student will

- a) write verbal expressions as algebraic expressions and sentences as equations and vice versa; and
- b) evaluate algebraic expressions for given replacement values of the variables.

**HINTS & NOTES**

Sum –

Total –

Increased by –

Difference –

Less than –

Decreased by –

Product of –

Times -

Quotient of –

Twice –

**REMEMBER** – 7 less than a number means  $n-7$  **NOT**  $7-n$

**PRACTICE**

1. Which represents the phrase shown?

*The product of three and a number, decreased by 2*

- A.  $3(x - 2)$
- B.  $3(2 - x)$
- C.  $2 - 3x$
- D.  $3x - 2$

2. Which phrase best represents the following?

$$4x - 6$$

- F. Six less than four times a number.
- G. Four times a number less than six.
- H. Six less than a number squared.
- J. A number squared less than six.

3. **Twice the number of students in Tim's class divided by five is ten.**

Which best represents the sentence above?

- A.  $\frac{2j}{5} = 10$
- B.  $\frac{j^2}{5} = 10$
- C.  $\frac{2j}{5} + 10$
- D.  $\frac{j^2}{5} + 10$

**SOL 7.14**

The student will

- a) solve one- and two-step linear equations in one variable; and
- b) solve practical problems requiring the solution of one- and two-step linear equations.

**HINTS & NOTES**

**Plug it in! Plug it in!**

For any problem involving solving an equation, plug in the solution you get to see if your answer checks!

**PRACTICE**

1. What is the value of  $k$  that makes the following true?

$$k - (-2) = 6$$

- A. -8
- B. -4
- C. 4
- D. 8

2. Which represents the value for  $t$  that make the following true?

$$t + 6 = 4$$

- F.  $t = -10$
- G.  $t = -2$
- H.  $t = 2$
- J.  $t = 10$

3.

**What is the solution to the number sentence?**

$$\frac{c}{10} = 40$$

- A  $c = 4$
- B  $c = 30$
- C  $c = 50$
- D  $c = 400$

4.

A large box contains 11 smaller boxes of raisins. The price of the large box is \$2.75. Each of the smaller boxes of raisins costs the same amount. Which could be used to find  $d$ , the price of a smaller box?

- A  $11d = 2.75$
- B  $d + 11 = 2.75$
- C  $d - 11 = 2.75$
- D  $\frac{d}{11} = 2.75$

**SOL 7.15****The student will**

- a) solve one-step inequalities in one variable; and
- b) graph solutions to inequalities on the number line.

**HINTS & NOTES**

\_\_\_\_\_ do not have just one solution.

Remember when both sides of an inequality are multiplied or divided by a \_\_\_\_\_ number, the inequality symbol \_\_\_\_\_!

When graphing the solution to an inequality on a number line, use the following tips.

1. use an \_\_\_\_\_ circle for inequalities  $<$  and  $>$
2. used a \_\_\_\_\_ in (closed) circle for the inequalities  $\leq$  and  $\geq$
3. Pick a number to plug into your inequality. If it works then shade in that side of your circle.

For example:  $y \geq 2$  would have a shaded in circle on the number 2. If I pick the number 1 it does not work, therefore I shade in the number line to the right of the 2.

**PRACTICE**

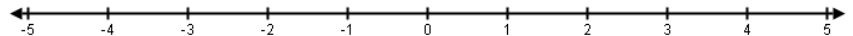
1. Which of the following is equivalent to the inequality

$$X + 6 < 9$$

- A.  $x < 3$
- B.  $x < 15$
- C.  $x > 3$
- D.  $x > 15$

2. Graph the solution to the following inequality on the number line below.

$$-7x \geq -14$$



3. Which is a solution to the inequality  $n - 8 > 4$ ?

- A. -4
- B. 4
- C. 12
- D. 18

**SOL 7.16**

The student will apply the following properties of operations with real numbers:

- a) the commutative and associative properties for addition and multiplication;
- b) the distributive property;
- c) the additive and multiplicative identity properties;
- d) the additive and multiplicative inverse properties; and
- e) the multiplicative property of zero.

**HINTS & NOTES****Commutative –**

$$a + b = b + a$$

$$a \cdot b = b \cdot a$$

**Associative –**

$$a + (b + c) = (a + b) + c$$

$$a \cdot (b \cdot c) = (a \cdot b) \cdot c$$

**Distributive –**

$$a(b + c) = ab + ac$$

**Identity –**

$$a + 0 = a$$

$$a \cdot 1 = a$$

**Inverse –**

$$a + -a = 0$$

$$a \cdot \frac{1}{a} = 1$$

**Multiplicative Property of Zero –**

$$a \cdot 0 = 0$$

**PRACTICE**

1.  $\frac{2}{5} \cdot x = 1$

If the number sentence is true, then x is the –

- A. additive identity
- B. additive inverse
- C. multiplicative identity
- D. multiplicative inverse

1. Which number sentence illustrates the commutative property of multiplication?

F.  $12 + (10 \cdot 5) = 12 + (5 \cdot 10)$

G.  $12 + (10 \cdot 5) = 10 + (12 \cdot 5)$

H.  $12 + (10 \cdot 5) = 12 \cdot 10 + 12 \cdot 5$

J.  $12 + (10 \cdot 5) = (12 + 10) \cdot 5$

2. Which is false ?

F  $-62 + 123 = 123 + -62$

G  $-5 \times (-35 + 42) = (-5 \times -35) + (-5 \times 42)$

H  $(-891 + 345) - -78 = -891 + (345 - -78)$

J  $35 \div (-30 + 37) = (-35 \div -30) + (-35 \div 37)$